City of Detroit

Information Technology Services Department

Performance Audit

March 2001

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MEMORANDUM

DATE: May 9, 2001

TO: Mayor Dennis Archer
Honorable City Council

FROM: Joseph L. Harris
Auditor General

RE: **Performance Audit of the Information Technology Services Department**

Attached for you review is our report on the performance audit of the Information Technology Services Department (ITS). Our audit evaluated the existence, efficiency and effectiveness of ITS processes in various areas, such as information security, data management, strategic planning, and contingency planning.

This report contains an executive summary; our audit scope and objectives; our audit methodology; and our comments and recommendations.

At the audit exit conference, we requested that the Department provide us with its written responses to our comments and recommendations, which we would have included as part of this report. However, the Department has not provided us with such responses.

A copy of this report has been provided to the Information Technology Services Department.

We appreciate the cooperation and assistance extended to us by the employees of the ITS during our audit.

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Executive Summary

The Information Technology Services Department (ITS) is responsible for maintaining and expanding the City's technology infrastructure, including maintenance and operation of technology systems, applications, databases and computing hardware and software, as well as delivery of new and enhanced technologies and providing end user training and support. The mission of ITS is to provide "world class" computing and communication technology and services to City agencies, enabling them to effectively manage assets and deliver services to Detroit citizens, businesses and visitors. ITS is a service agency that employs approximately 180 people. For fiscal year 2000-2001, ITS has a budget of approximately $40.8 million.

The ITS has recently implemented an Enterprise Systems Management Methodology to coordinate and integrate its business processes. This methodology is being utilized to ensure the continued reliability of City information assets. The process and control improvement recommendations noted in this audit report should be integrated into the Enterprise Systems Management Methodology. In addition, the ITS should ensure this methodology is extended to include any agency driven technology initiatives to ensure consistent standards and practices are being utilized citywide. Key recommendations identified are:

- **Technology Vision, Strategy and Services**
    - Develop a technology vision that establishes the ITS as the manager for all technology initiatives throughout the City.
    - Develop and implement a coordinated strategy that documents the future technological direction for the City of Detroit, and the resources necessary to meet the targets and goals of the strategy.
    - Develop and implement service level agreements with all end users that ensure the documentation and adherence to end user requirements.
- **Information Security** – Establish a formal Information Security Architecture to protect and ensure the integrity of information and data utilized by the City of Detroit.
- **Contingency Planning** – Establish detailed contingency plans that are coordinated with the contingency plans of end users. Establish an alternate site or hot-site for recovery of technology systems and applications.

- **System Development Life Cycle Methodology -** Develop system life cycle methodology standards to ensure the integrity of information through consistent procedures for development and maintenance of all City systems and applications.

- **Policies and Procedures –** Develop formalized policies and procedures to ensure consistent processes are utilized by all ITS staff.

Detailed findings and recommendations are outlined on the following pages of this report. Management and staff of the ITS were very cooperative and willingly shared information. We appreciate the courtesy and assistance extended to us during our audit.

Scope and Objectives

Our review assessed the existence, efficiency and effectiveness of ITS processes in the following areas:

Information Security	Contingency Planning
Change Management	Systems Acquisition, Maintenance & Development
Data Management	Operations Management
End User Computing	Problem and Fault Management
Human Resources	Performance & Capacity Management
Strategic Planning	Media & Output Management

We evaluated the risks associated with each process and identified areas where controls and processes could be improved.

Audit Methodology

Our audit was conducted in accordance with generally accepted government auditing standards, as promulgated by the Comptroller General of the United States. This included interviews with ITS Management and employees and reviews of documented processes, policies, procedures and standards.

Control Objectives for Business Information and Related Technology (COBIT) were utilized as a basis for determining Information Technology (IT) control objectives and processes that would exist in a well-controlled Information Technology environment. COBIT was developed by the IT Governance Institute and represents generally applicable and accepted standards for good IT security and control practices that provide a reference framework for management, users, and IS audit, control and security practitioners.

Comments and Recommendations

The recommendations below are designed to improve performance, enhance processes and minimize associated risks.

I. Technology Vision, Strategy and Service

1. Comment

Some agencies are acquiring and maintaining their own technology equipment, without the involvement of ITS.

Cause

The ITS allows agencies to engage in technology initiatives on their own.

Effect

Technology initiatives occurring outside of the realm of the ITS may not be coordinated with the overall goals and strategy of the City, and do not allow the ITS to ensure that consistent practices are followed in the administration of all City technology initiatives.

Recommendation

The ITS should maintain an appropriate level of involvement in any technological process being utilized throughout the City.

Criteria

The organizational structure of the City and Executive Order No. 10 implies that the ITS is to be involved in all technology acquisitions and initiatives.

2. Comment

The ITS Vision Statement notes that the ITS vision is to become the "consulting group of choice" for the technology needs throughout the organization. The vision statement is inconsistent with the overall organizational structure of the City as the ITS is required to be involved in all aspects of technology services and needs throughout the organization.

Cause

The ITS has not accepted the responsibility of planning, coordinating, and managing the City's information technology strategy and operations.

Effect

The inconsistency between the Vision Statement and Executive Order No. 10 leads to confusion and lack of adequate coordination and control over the IT initiatives.

Recommendation
The ITS vision should accurately reflect its organizational role so that City agencies and end users are aware that ITS must be involved in all technology processes throughout the City.

Criteria
There must be a consistency of IT processes throughout the organization to ensure effectiveness of overall operations and ensure that compatible systems and processes are in use throughout the City, as required pursuant to Executive Order No. 10.

3. Comment
A current technology strategy, which documents the overall City technology direction and necessary resources to achieve the strategy, does not exist.

Cause
Management has not made the development of a technology strategy a priority.

Effect
Without a current technology strategy, ITS cannot ensure that resources and user needs will be strategically coordinated and prioritized to meet all user needs and that there will be one coordinated outcome for the City, rather than individual outcomes for the various agencies that may be incompatible with each other.

Recommendation
The ITS should develop and maintain a technology strategy to document future technological direction and plans for the City of Detroit, as well as the resources necessary to meet this strategy. The strategy should be coordinated with the needs and strategies of all City agencies and customers of ITS services. Specific elements of the strategy should include:

- A strategic plan outlining the short-term and long-term technology initiatives for the City of Detroit.

- A project plan to ensure implementation of the strategic plan, and a process for monitoring and reporting progress on individual projects related to the strategic plan.

- Policies, standards and procedures to ensure realization of the strategic plan.

- Human resource and staffing initiatives that support realization of the strategic plan. This would include recruiting plans and projections, career management initiatives, and a competitive rewards and compensation system.

Criteria
A technology strategy should be coordinated and aligned with user needs and with City goals to assist in ensuring the coordination of an overall City direction.

4. **Comment**
Formal Service Level agreements with end users have not been fully established.

Cause
ITS management has recently begun to develop and implement service level agreements and has set a goal of completing 10 service level agreements by June 30, 2001.

Effect
In the absence of service level agreements, mutually agreed upon standards of performance and user and IT defined responsibilities are lacking, increasing the risk of misunderstanding and poor planning for present and future technological needs.

Recommendation
We recommend ITS establish service level agreements with all end users and customers. The progress of this project should be monitored and reported to ensure full realization and utilization of Service Level Agreements.

Criteria
Formal service level agreements should be developed to ensure that user needs are being appropriately addressed and that user and ITS responsibilities are clearly defined. Such agreements also assist in outlining and assessing future technological direction and ensuring end user needs continue to be met in the event of new technology acquisitions.

II. Information Security

Comment
There is no formal Information Security Architecture in existence. We did note ITS is developing a strategy for implementing such an architecture.

Cause
Resources for implementation of the architecture have not been fully approved.

Effect
Without such an architecture, no assurance exists that proprietary or confidential information regarding City operations and residents cannot be fraudulently obtained and/or utilized inappropriately.

Recommendation
ITS management should implement a formal information security architecture that includes establishment of a staffing structure responsible for maintaining this architecture. Elements of such a structure should include:

- Policies, procedures and standards for network, database, application, operating system and peripheral device logical security parameters, such as minimum password length, appropriate password change parameters,

information data classification and sensitivity standards, and consistent and documented data definitions.

- Policies, procedures and processes to ensure that access to production data, and application programs are restricted to appropriate personnel. This should also include ensuring appropriate segregation of duties exist to prevent unauthorized changes to data or application programs.

- Monitoring processes to ensure that access to City of Detroit applications and data is not being compromised. This should also include establishment of policies and procedures to ensure that access privileges are granted to only appropriate users and that changes to access privileges are made promptly upon employee termination or transfer.

- A security awareness program, which informs and trains end users on general security practices and the appropriate use of City of Detroit and ITS maintained data and equipment.

- Internet use policies and procedures to ensure that internet privileges are not abused.

- Standards to ensure that virus protection is installed on all equipment and virus signature updates are installed on a timely basis.

Criteria
An Information Security Architecture should be implemented to provide assurance that information, equipment, and data maintained and owned by the City is secure from theft, fraud and misuse, and that integrity of data is maintained.

III. Contingency Planning

1. Comment
An alternate back-up site for disaster recovery purposes exists only for the Public Safety applications. However, the alternate site for the Public Safety applications and platforms is located within close proximity of the primary equipment maintained in the data center. All other applications and platforms maintained by ITS do have a back-up platform, however this equipment is maintained in the same data center that contains the primary equipment.

Cause
Management believes the probability of a disaster affecting both sites is minimal.

Effect
Failure to restore City services in the wake of a disaster could result in the inability to ensure the safety of the citizens.

Recommendation
An alternate location or hot-site for City of Detroit technology systems and applications should be established. This alternate location should be geographically located so that it is unlikely to be affected by a disaster occurring in the general vicinity of the primary data center.

Criteria
An appropriate alternate processing site or hot-site located sufficiently remote from the main processing site is needed to ensure that all applications and systems utilized by the City can be restored and operational in a reasonable time frame.

2. Comment
The existing disaster recovery plan established by ITS does not fully address a true disaster scenario. We noted that the existing plan does not specifically detail alternative operating locations, equipment needs, an order for recovering applications and operations, interdependencies between applications and employee safety issues. In addition, the plan has not been fully tested for effectiveness. We also noted that end-user recovery plans were initially created for the millennium change and primarily address equipment failure, and not a true disaster scenario.

Cause
Management has not made the developing and testing of a detailed plan for a disaster scenario a priority due to the perceived low probability of such an event.

Effect
Failure to restore City services in the wake of a disaster could result in the inability to ensure the safety of the citizens.

Recommendation
The ITS should expand the existing disaster recovery plan to address a true disaster scenario. This should include detailing where alternate operations will be established, the order in which operations and applications are re-established, application interdependency, the equipment that will be necessary and how the equipment will be obtained, and how employee safety will be ensured and communications established so that staff will be aware of their responsibilities. This plan should be coordinated with end user contingency plans, and tested at periodic intervals to ensure effectiveness.

Criteria
Detailed Disaster Recovery Plans should be tested on a periodic basis to assist in ensuring operations can be effectively restored in the event of a disaster that renders current locations, equipment, and systems unusable or inoperable.

IV. System Development Life Cycle Methodology

Comment

A uniform, formal System Development Life Cycle Methodology has not been implemented for systems maintained by the ITS Department.

Cause

Since ITS systems are primarily purchased products, various vendor methodologies are utilized in the system implementation/maintenance process.

Effect

If a vendor methodology is inadequate or ineffective, it could result in the implementation of technology equipment that does not effectively meet the needs of the end user, or the overall needs of the City.

Recommendation

The ITS should develop System Development Life Cycle Standards to ensure that consistent processes are utilized for all City maintained systems throughout their life cycle.

Criteria

A System Development Life Cycle Methodology is necessary to ensure that user needs and requirements are met before, during and after implementation of a technology application, and provides a process to follow to ensure that City requirements are adhered to when implementing new technologies.

V. Policies and Procedures

Comment

Formalized documentation for day-to-day procedures, specifically in the Media and Output Management, and Computer Operations Management areas, does not fully exist.

Cause

Although management has formally documented high-level policies and procedures for their current business processes, management has not completed the documentation of the day-to-day detailed procedures.

Effect

In the absence of documented day-to-day procedures, there is an increased risk of operations not being consistently performed, and no standardized reference exists to help train newly hired staff.

Recommendation

We recommend ITS document the day-to-day operating procedures, specifically the Media and Output Management, and Computer Operations Management areas.

Criteria

Documented processes and instructions ensure consistent processes and procedures are utilized and provide a training and reference tool for staff to follow.